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# Tower Lights Animator

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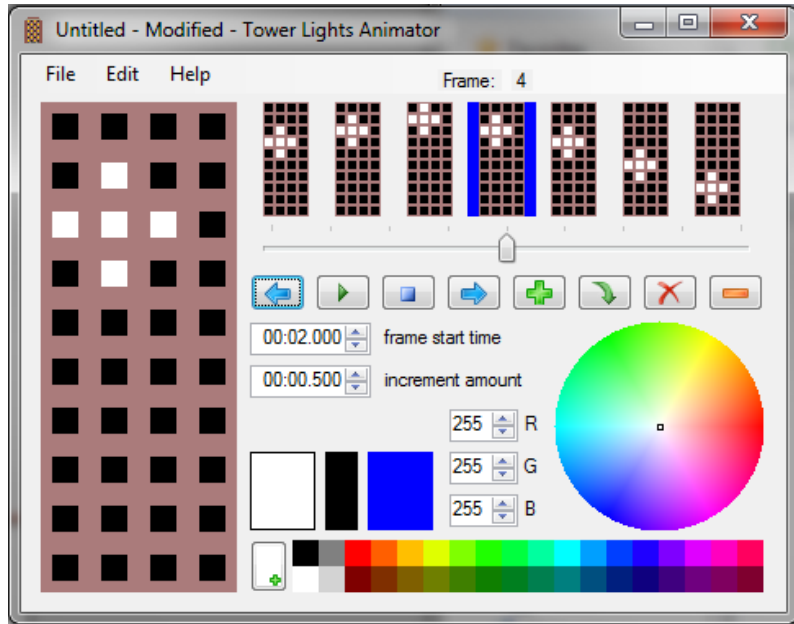
# Overview

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- Previous Version
  - New Version Goals/Solutions
  - Project Learning & Design Decisions
    - Front End
    - Back End
  - Examples & Features
    - QML Interaction
    - Event Handling
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# Previous Version

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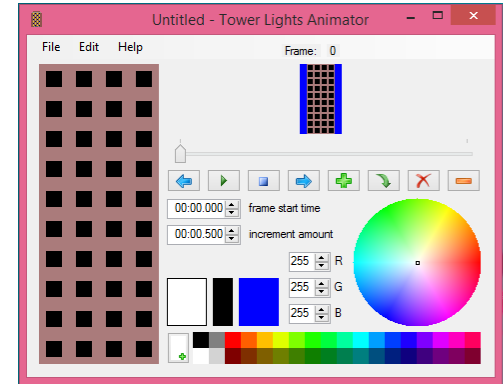
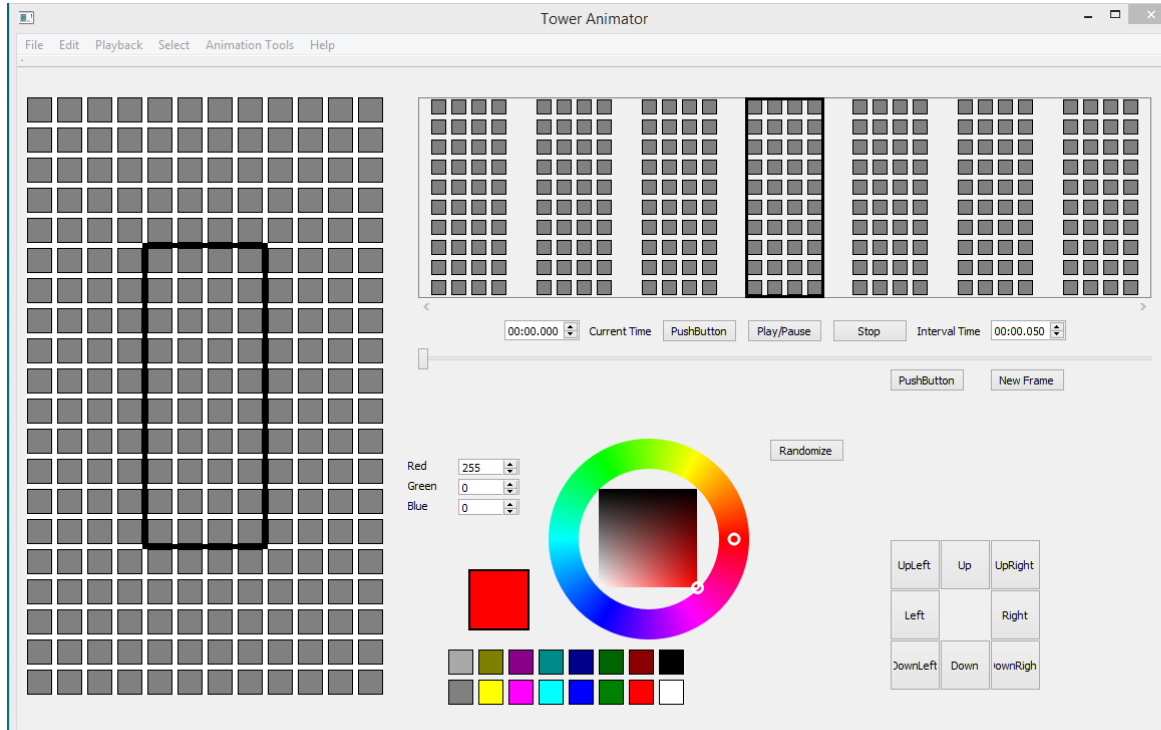
- Grid and Interface Size
- Language
- Documentation
- Maintainability
- Audio Integration
- Usability
- Work Efficiency

# New Version Goals/Solutions

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- Grid and Interface : Size & Staging Area
  - Language : C# -> C++
  - Documentation : None -> Full
  - Maintainability : For Client & ACM
  - Audio Integration : Loading & mp3
  - Usability : Intuitive & Manual
  - Work Efficiency : Automation
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# Comparison



# Project Learning & Design Decisions

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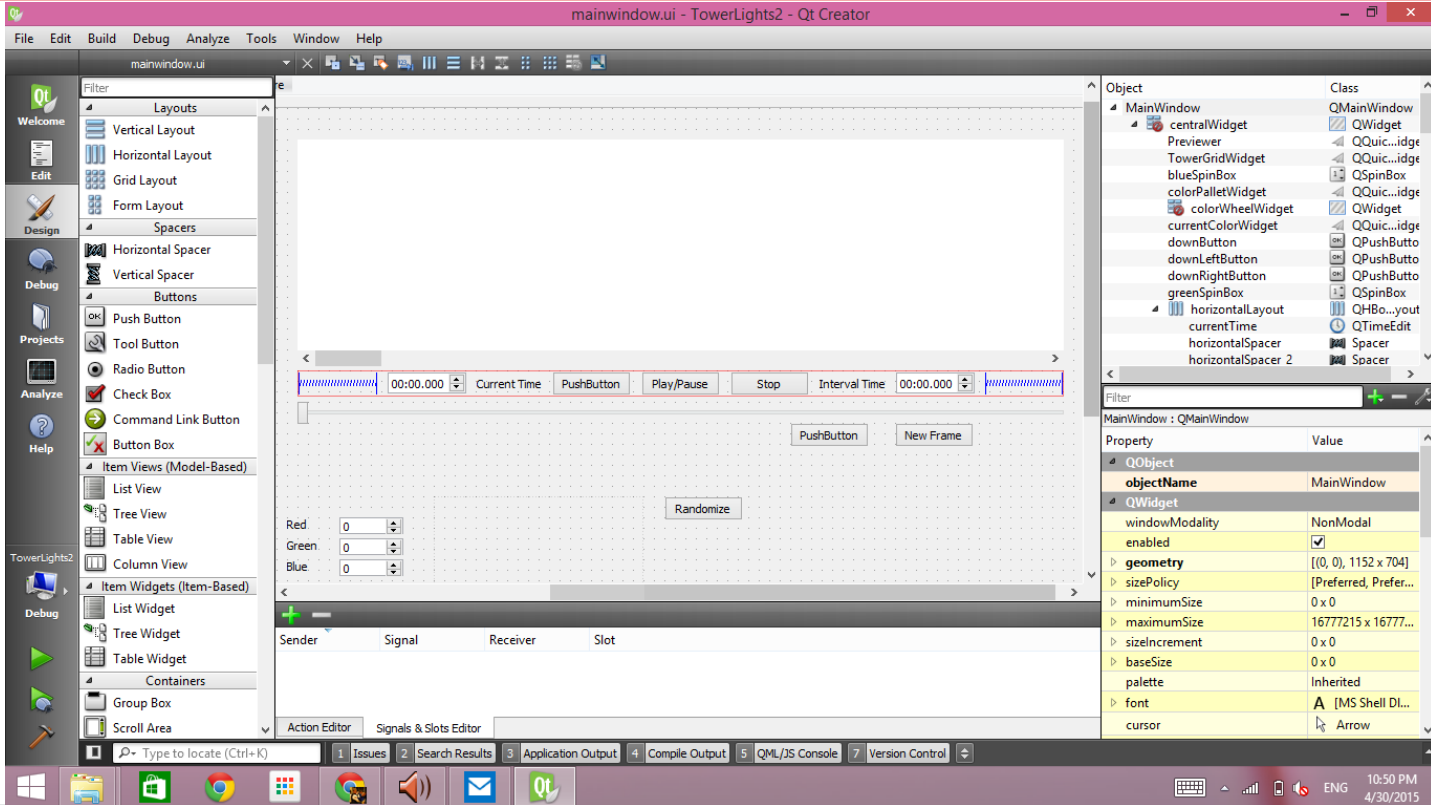
- C++
  - Qt
  - Doxygen
  - Front End/Back End
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# C++, Qt, & Doxygen

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- UI Curriculum
  - XML forms for GUI
  - QML addressed as class
  - Built in classes
    - QMediaPlayer
    - QFileDialog
  - Structured Comments
  - Documentation
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# Qt Designer





# Front End

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- MainWindow
    - Persistent
    - Interface
    - Event Handling
    - Qt Designer
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# Back End

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- Movie
    - Dynamic
    - Data
    - Processing
    - Simple C++
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# QML & C++ Interaction

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- Grid code, repeater
- Addressed as Class
  - Reading from QML
  - Writing to QML

```
Grid {  
    objectName: "towerGrid"  
    rows: 20  
    columns: 12  
    spacing: 5  
    Repeater {  
        objectName: "windows"  
        model: 240  
        Rectangle {  
            width: 25  
            height: 25  
            color: "grey"  
            border.width: 1  
            border.color: "black"
```

# QML & C++ Interaction

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- Grid code, repeater
- Addressed as Class
  - Reading from QML
  - Writing to QML

```
ui->TowerGridWidget->setSource(QUrl("qrc:/towerGrid.qml"));
```

```
QQuickWidget *towerGrid = ui->TowerGridWidget;
```

```
towerGrid->setClearColor(Qt::white);
```

```
QList <QQuickItem *> grid = ui->TowerGridWidget->  
    rootObject()->childItems();
```

# Event Handling

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- Events
- Sockets
- Example
  - MediaPlayer
  - currentMovie
  - MediaSlider

```
connect(  
    audio,                                //object emitting signal  
    SIGNAL(durationChanged(qint64)),      //signal  
    this,                                //object receiving signal  
    SLOT(on_audioDurationChanged(qint64))); //function of object to call  
  
void MainWindow::on_audioDurationChanged(qint64 duration)  
{  
    ui->mediaSlider->setRange(0,duration/1000);  
    ui->mediaSlider->setValue(currentMovie-> getCurrentFrame()-  
    >getTimeStamp()/1000);  
}
```

# Summary

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- Improvements Needed on Previous Version
  - Goals/Solutions For New Version
  - Project Learning & Design Decisions
    - C++ with Qt/QML
    - Interface and Data
  - Examples & Features
    - QML as C++ classes
    - Events, Signals, and Sockets
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**Questions?**

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